CLAIMS

1. A wavelength plate laser optical system which is a wavelength plate using a stretched and oriented film containing a cyclic olefin based resin, characterized by having values of the following formula (a) against two laser beams having a different wavelength such that the value is ((0.2 to 0.3) + X) for a first laser beam and that the value is ((0.8 to 1.2) + Y) for a second laser beam, respectively (wherein X represents 0 or the number of an integral multiple of 0.5; and Y represents 0 or an integer of 1 or more):

$$Re(\lambda)/\lambda \qquad (a)$$

wherein λ represents a wavelength (nm) of the laser beam; and $Re(\lambda)$ represents a retardation value (nm) of the laser beam having transmitted through the wavelength plate.

2. The wavelength plate laser optical system according to claim 1, wherein in the formula (a), X is 1, and Y is 0.

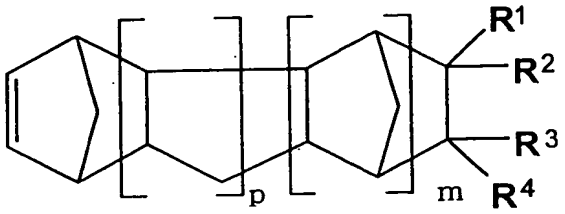
3. The wavelength plate laser optical system according to claim 1 or 2, wherein plural sheets of the stretched and oriented film containing a cyclic olefin based resin are laminated such that the respective optical axes become parallel and used.

4. The wavelength plate laser optical system according to any one of claims 1 to 3, wherein the stretched and oriented film containing a cyclic olefin based resin is bonded and fixed onto a transparent support.

5. The wavelength plate laser optical system according to any one of claims 1 to 4, wherein the cyclic olefin based resin is at least one member selected from the group consisting of (1) a ring-opening polymer of a specific monomer represented by the following general formula (1); (2) a ring-opening copolymer of a specific monomer

represented by the following general formula (1) and a copolymerizable monomer; (3) a hydrogenated (co)polymer of the foregoing ring-opening (co)polymer (1) or (2); (4) a (co)polymer resulting from cyclization of the foregoing ring-opening (co)polymer (1) or (2) by the Friedel-Crafts reaction and then hydrogenation; (5) a saturated copolymer of a specific monomer represented by the following general formula (1) and an unsaturated double bond-containing compound; and (6) an addition type (co)polymer of at least one monomer selected from a specific monomer represented by the following general formula (1), a vinyl based cyclic hydrocarbon based monomer and a cyclopentadiene based monomer, and a hydrogenated (co)polymer thereof:

General Formula (1)



wherein R^1 to R^4 each represents a hydrogen atom, a halogen atom, a hydrocarbon group having from 1 to 30 carbon atoms, or other monovalent organic group, and may be the same or different; R^1 and R^2, or R^3 and R^4 may be taken together to form a divalent hydrocarbon group; R^1 or R^2 and R^3 or R^4 may be bonded to each other to form a monocyclic or polycyclic structure; m represents 0 or a positive integer; and p represents 0 or a positive integer.